SEQUENCE LISTING

<110> Farmer, Alan Andrew

<120> SEQUENCE SPECIFIC RECOMBINASE-BASED METHODS FOR PRODUCING INTRON CONTAINING VECTORS AND COMPOSITIONS FOR USE IN PRACTICING THE SAME

<130> CLON-069

<140> 10/055,794
<141> 2002-01-17

<150> 60/263,358
<151> 2001-01-18

<160> 17

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 4938
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Vector

<400> 1
gcggccgcat aacttcgtat agcatacatt atacgaagtt atcagtcgac ggtaccggac 60
atatgcccgg gaattcctgc aggatccgct cgagaagctt tctagaccat tcgtttggcg 120
cgcgggccca ggtgagtggt cataatcata atcataatca taatcataat cacaactagc 180
ctaggagatc ctggtcatga ctagtgcttg gattctcacc aataaaaaac gcccggcggc 240
aaccgagcgt tctgaacaaa tccagatgga gttctgaggt cattactgga tctatcaaca 300
ggagtccaag cgagctcgat atcaaattac gccccgccct gccactcatc gcagtactgt 360
tgtaattcat taagcattct gccgacatgg aagccatcac aaacggcatg atgaacctga 420
atcgccagcg gcatcagcac cttgtcgcct tgcgtataat atttgcccat ggtgaaaacg 480
ggggcgaaga agttgtccat attggccacg tttaaatcaa aactggtgaa actcacccag 540
ggattggctg agacgaaaaa catattctca ataaaccctt tagggaaata ggccaggttt 600
tcaccgtaac acgccacatc ttgcgaatat atgtgtagaa actgccggaa atcgtcgtgg 660
tattcactcc agagcgatga aaacgtttca gtttgctcat ggaaaacggt gtaacaaggg 720
tgaacactat cccatatcac cagctcaccg tctttcattg ccatacgaaa ttccggatga 780
gcattcatca ggcgggcaag aatgtgaata aaggccggat aaaacttgtg cttatttttc 840
tttacggtct ttaaaaaggc cgtaatatcc agctgaacgg tctggttata ggtacattga 900
gcaactgact gaaatgcctc aaaatgttct ttacgatgcc attgggatat atcaacggtg 960
gtatatccag tgatttttt ctccatttta gcttccttag ctcctgaaag atccataact 1020
tcgtatagca tacattatac gaagttatgc ggccgcgacg tccacatata cctgccgttc 1080
actattattt agtgaaatga gatattatga tattttctga attgtgatta aaaaggcaac 1140
tttatgccca tgcaacagaa actataaaaa atacagagaa tgaaaagaaa cagatagatt 1200
ttttagttct ttaggcccgt agtctgcaaa tccttttatg attttctatc aaacaaaaga 1260

ggaaaataga ccagttgcaa tccaaacgag agtctaatag aatgaggtcg aaaagtaaat 1320
cgcgcgggtt tgttactgat aaagcaggca agacctaaaa tgtgtaaagg gcaaagtgta 1380
tactttggcg tcacccctta catattttag gtctttttt attgtgcgta actaacttgc 1440
catcttcaaa caggagggct ggaagaagca gaccgctaac acagtacata aaaaaggaga 1500
catgaacgat gaacatcaaa aagtttgcaa aacaagcaac agtattaacc tttactaccg 1560
cactgctggc aggaggcgca actcaagcgt ttgcgaaaga aacgaaccaa aagccatata 1620
aggaaacata cggcatttcc catattacac gccatgatat gctgcaaatc cctgaacagc 1680
aaaaaaatga aaaatatcaa gttcctgagt tcgattcgtc cacaattaaa aatatctctt 1740
ctgcaaaagg cctggacgtt tgggacagct ggccattaca aaacgctgac ggcactgtcg 1800
caaactatca cggctaccac atcgtctttg cattagccgg agatcctaaa aatgcggatg 1860
acacatcgat ttacatgttc tatcaaaaag tcggcgaaac ttctattgac agctggaaaa 1920
acgctggccg cgtctttaaa gacagcgaca aattcgatgc aaatgattct atcctaaaag 1980
accaaacaca agaatggtca ggttcagcca catttacatc tgacggaaaa atccgtttat 2040
tctacactga tttctccggt aaacattacg gcaaacaaac actgacaact gcacaagtta 2100
acgtatcagc atcagacagc tctttgaaca tcaacggtgt agaggattat aaatcaatct 2160
ttgacggtga cggaaaaacg tatcaaaatg tacagcagtt catcgatgaa ggcaactaca 2220
gctcaggcga caaccatacg ctgagagatc ctcactacgt agaagataaa ggccacaaat 2280
acttagtatt tgaagcaaac actggaactg aagatggcta ccaaggcgaa gaatctttat 2340
ttaacaaagc atactatggc aaaagcacat cattcttccg tcaagaaagt caaaaacttc 2400
tgcaaagcga taaaaaacgc acggctgagt tagcaaacgg cgctctcggt atgattgagc 2460
taaacgatga ttacacactg aaaaaagtga tgaaaccgct gattgcatct aacacagtaa 2520
cagatgaaat tgaacgcgcg aacgtcttta aaatgaacgg caaatggtac ctgttcactg 2580
actcccgcgg atcaaaaatg acgattgacg gcattacgtc taacgatatt tacatgcttg 2640
gttatgtttc taattcttta actggcccat acaagccgct gaacaaaact ggccttgtgt 2700
taaaaatgga tcttgatcct aacgatgtaa cctttactta ctcacacttc gctgtacctc 2760
aagcgaaagg aaacaatgtc gtgattacaa gctatatgac aaacagagga ttctacgcag 2820
acaaacaatc aacgtttgcg cctagcttcc tgctgaacat caaaggcaag aaaacatctg 2880
ttgtcaaaga cagcatcctt gaacaaggac aattaacagt taacaaataa aaacgcaaaa 2940
gaaaatgccg atatcctatt ggcattgacg tcaggtggca cttttcgggg aaatgtgcgc 3000
ggaaccccta tttgtttatt tttctaaata cattcaaata tgtatccgct catgagacaa 3060
taaccctgat aaatgcttca ataatattga aaaaggaaga gtatgagtat tcaacatttc 3120
cgtgtcgccc ttattccctt ttttgcggca ttttgccttc ctgtttttgc tcacccagaa 3180
acgctggtga aagtaaaaga tgctgaagat cagttgggtg cacgagtggg ttacatcgaa 3240
ctggatctca acagcggtaa gatccttgag agttttcgcc ccgaagaacg ttttccaatg 3300
atgagcactt ttaaagttct gctatgtggc gcggtattat cccgtattga cgccgggcaa 3360
gagcaactcg gtcgccgcat acactattct cagaatgact tggttgagta ctcaccagtc 3420
acagaaaagc atcttacgga tggcatgaca gtaagagaat tatgcagtgc tgccataacc 3480
atgagtgata acactgcggc caacttactt ctgacaacga tcggaggacc gaaggagcta 3540
accgcttttt tgcacaacat gggggatcat gtaactcgcc ttgatcgttg ggaaccggag 3600
ctgaatgaag ccataccaaa cgacgagcgt gacaccacga tgcctgtagc aatggcaaca 3660
acgttgcgca aactattaac tggcgaacta cttactctag cttcccggca acaattaata 3720
gactggatgg aggcggataa agttgcagga ccacttctgc gctcggccct tccggctggc 3780
tggtttattg ctgataaatc tggagccggt gagcgtgggt ctcgcggtat cattgcagca 3840
ctggggccag atggtaagcc ctcccgtatc gtagttatct acacgacggg gagtcaggca 3900
actatggatg aacgaaatag acagatcgct gagataggtg cctcactgat taagcattgg 3960
taactgtcag accaagttta ctcatatata ctttagattg atttaaaact tcatttttaa 4020
tttaaaagga tctaggtgaa gatccttttt gataatctca tgaccaaaat cccttaacgt 4080
gagttttcgt tccactgagc gtcagacccc gtagaaaaga tcaaaggatc ttcttgagat 4140
cctttttttc tgcgcgtaat ctgctgcttg caaacaaaaa aaccaccgct accagcggtg 4200
gtttgtttgc cggatcaaga gctaccaact ctttttccga aggtaactgg cttcagcaga 4260
gcgcagatac caaatactgt tcttctagtg tagccgtagt taggccacca cttcaagaac 4320

tctgtagcac cgcctacata cctcgctctg ctaatcctgt taccagtggc tgctgccagt 4380
ggcgataagt cgtgtcttac cgggttggac tcaagacgat agttaccgga taaggcgcag 4440
cggtcgggct gaacgggggg ttcgtgcaca cagcccagct tggagcgaac gacctacacc 4500
gaactgagat acctacagcg tgagctatga gaaagcgcca cgcttcccga agggagaaag 4560
gcggacaggt atccggtaag cggcagggtc ggaacaggag agcgcacgag ggagcttcca 4620
gggggaaacg cctggtatct ttatagtcct gtcgggtttc gccacctctg acttgagcgt 4680
cgatttttgt gatgctcgtc aggggggcgg agcctatgga aaaacgccag caacgcggcc 4740
tttttacggt tcctggcctt ttgctggcct tttgctcaca tgttctttcc tgcgttatcc 4800
cctgattctg tggataaccg tattaccgcc ttacgcgtgt aaaacgacgg ccagtagatc 4860
tgtaatacga ctcactatag ggcgctagct gctcgccgca gccgaacgac cgagcgcagc 4920
gagtcagtga gcgaggaa 4938

<210> 2
<211> 4894
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Vector

<400> 2
tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata tggagttccg 60
cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc cccgcccatt 120
gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc attgacgtca 180
atgggtggag tatttacggt aaactgccca cttggcagta catcaagtgt atcatatgcc 240
aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt atgcccagta 300
catgacctta tgggactttc ctacttggca gtacatctac gtattagtca tcgctattac 360
catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg actcacgggg 420
atttccaagt ctccacccca ttgacgtcaa tgggagtttg ttttggcacc aaaatcaacg 480
ggactttcca aaatgtcgta acaactccgc cccattgacg caaatgggcg gtaggcgtgt 540
acggtgggag gtctatataa gcagagctgg tttagtgaac cgtcagatcc gctagcataa 600
cttcgtatag catacattat acgaagttat agatccaata ttattgaagc atttatcagg 660
gttattgtct catgagcgga tacatatttg aatgtattta gaaaaataaa caaatagggg 720
ttccgcgcac atttccccga aaagtgccac ctgacgtgga tctcgagctc aagcttcgaa 780
ttcagggttt ccttgacaat atcatactta tcctgtccct ttttttcca cagctaccgg 840
tcgcgagcaa gggcgaggag ctgttcaccg gggtggtgcc catcctggtc gagctggacg 900
gcgacgtaaa cggccacaag ttcagcgtgt ccggcgaggg cgagggcgat gccacctacg 960
gcaagctgac cctgaagttc atctgcacca ccggcaagct gcccgtgccc tggcccaccc 1020
tcgtgaccac cctgacctac ggcgtgcagt gcttcagccg ctaccccgac cacatgaagc 1080
agcacgactt cttcaagtcc gccatgcccg aaggctacgt ccaggagcgc accatcttct 1140
tcaaggacga cggcaactac aagacccgcg ccgaggtgaa gttcgagggc gacaccctgg 1200
tgaaccgcat cgagctgaag ggcatcgact tcaaggagga cggcaacatc ctggggcaca 1260
agctggagta caactacaac agccacaacg tctatatcat ggccgacaag cagaagaacg 1320
gcatcaaggt gaacttcaag atccgccaca acatcgagga cggcagcgtg cagctcgccg 1380
accactacca gcagaacacc cccatcggcg acggccccgt gctgctgccc gacaaccact 1440
acctgagcac ccagtccgcc ctgagcaaag accccaacga gaagcgcgat cacatggtcc 1500
tgctggagtt cgtgaccgcc gccgggatca ctctcggcat ggacgagctg tacaagtaaa 1560
gcggccgcga ctctagatca taatcagcca taccacattt gtagaggttt tacttgcttt 1620
aaaaaacctc ccacacctcc ccctgaacct gaaacataaa atgaatgcaa ttgttgttgt 1680
taacttgttt attgcagctt ataatggtta caaataaagc aatagcatca caaatttcac 1740
aaataaagca tttttttcac tgcattctag ttgtggtttg tccaaactca tcaatgtatc 1800

ttaaggcgta aattgtaagc gttaatattt tgttaaaatt cgcgttaaat ttttgttaaa 1860
tcagctcatt ttttaaccaa taggccgaaa tcggcaaaat cccttataaa tcaaaagaat 1920
agaccgagat agggttgagt gttgttccag tttggaacaa gagtccacta ttaaagaacg 1980
tggactccaa cgtcaaaggg cgaaaaaccg tctatcaggg cgatggccca ctacgtgaac 2040
catcacccta atcaagtttt ttggggtcga ggtgccgtaa agcactaaat cggaacccta 2100
aagggagccc ccgatttaga gcttgacggg gaaagccggc gaacgtggcg agaaaggaag 2160
ggaagaaagc gaaaggagcg ggcgctaggg cgctggcaag tgtagcggtc acgctgcgcg 2220
taaccaccac acccgccgcg cttaatgcgc cgctacaggg cgcgtcaggt ggcacttttc 2280
ggggaaatgt gcgcggaacc cctatttgtt tatttttcta aatacattca aatatgtatc 2340
cgctcatgag acaataaccc tgataaatgc ttcaataata ttgaaaaagg aagagtcctg 2400
aggcggaaag aaccagctgt ggaatgtgtg tcagttaggg tgtggaaagt ccccaggctc 2460
cccagcaggc agaagtatgc aaagcatgca tctcaattag tcagcaacca ggtgtggaaa 2520
gtccccaggc tccccagcag gcagaagtat gcaaagcatg catctcaatt agtcagcaac 2580
catagtcccg cccctaactc cgcccatccc gcccctaact ccgcccagtt ccgcccattc 2640
tccgccccat ggctgactaa ttttttttat ttatgcagag gccgaggccg cctcggcctc 2700
tgagctattc cagaagtagt gaggaggctt ttttggaggc ctaggctttt gcaaagatcg 2760
atcaagagac aggatgagga tcgtttcgca tgattgaaca agatggattg cacgcaggtt 2820
ctccggccgc ttgggtggag aggctattcg gctatgactg ggcacaacag acaatcggct 2880
gctctgatgc cgccgtgttc cggctgtcag cgcaggggcg cccggttctt tttgtcaaga 2940
ccgacctgtc cggtgccctg aatgaactgc aagacgaggc agcgcggcta tcgtggctgg 3000
ccacgacggg cgttccttgc gcagctgtgc tcgacgttgt cactgaagcg ggaagggact 3060
ggctgctatt gggcgaagtg ccggggcagg atctcctgtc atctcacctt gctcctgccg 3120
agaaagtatc catcatggct gatgcaatgc ggcggctgca tacgcttgat ccggctacct 3180
gcccattcga ccaccaagcg aaacatcgca tcgagcgagc acgtactcgg atggaagccg 3240
gtcttgtcga tcaggatgat ctggacgaag agcatcaggg gctcgcgcca gccgaactgt 3300
tcgccaggct caaggcgagc atgcccgacg gcgaggatct cgtcgtgacc catggcgatg 3360
cctgcttgcc gaatatcatg gtggaaaatg gccgcttttc tggattcatc gactgtggcc 3420
ggctgggtgt ggcggaccgc tatcaggaca tagcgttggc tacccgtgat attgctgaag 3480
agcttggcgg cgaatgggct gaccgcttcc tcgtgcttta cggtatcgcc gctcccgatt 3540
cgcagcgcat cgccttctat cgccttcttg acgagttctt ctgagcggga ctctggggtt 3600
cgaaatgacc gaccaagcga cgcccaacct gccatcacga gatttcgatt ccaccgccgc 3660
cttctatgaa aggttgggct tcggaatcgt tttccgggac gccggctgga tgatcctcca 3720
gcgcggggat ctcatgctgg agttcttcgc ccaccctagg gggaggctaa ctgaaacacg 3780
gaaggagaca ataccggaag gaacccgcgc tatgacggca ataaaaagac agaataaaac 3840
gcacggtgtt gggtcgtttg ttcataaacg cggggttcgg tcccagggct ggcactctgt 3900
cgatacccca ccgagacccc attggggcca atacgcccgc gtttcttcct tttccccacc 3960
ccaccccca agttcgggtg aaggcccagg gctcgcagcc aacgtcgggg cggcaggccc 4020
tgccatagcc tcaggttact catatatact ttagattgat ttaaaacttc atttttaatt 4080
taaaaggatc taggtgaaga tccttttga taatctcatg accaaaatcc cttaacgtga 4140
gttttcgttc cactgagcgt cagaccccgt agaaaagatc aaaggatctt cttgagatcc 4200
ttttttttctg cgcgtaatct gctgcttgca aacaaaaaaa ccaccgctac cagcggtggt 4260
ttgtttgccg gatcaagagc taccaactct ttttccgaag gtaactggct tcagcagagc 4320
gcagatacca aatactgtcc ttctagtgta gccgtagtta ggccaccact tcaagaactc 4380
tgtagcaccg cctacatacc tcgctctgct aatcctgtta ccagtggctg ctgccagtgg 4440
cgataagtcg tgtcttaccg ggttggactc aagacgatag ttaccggata aggcgcagcg 4500
gtcgggctga acgggggttt cgtgcacaca gcccagcttg gagcgaacga cctacaccga 4560
actgagatac ctacagcgtg agctatgaga aagcgccacg cttcccgaag ggagaaaggc 4620
ggacaggtat ccggtaagcg gcagggtcgg aacaggagag cgcacgaggg agcttccagg 4680
gggaaacgcc tggtatcttt atagtcctgt cgggtttcgc cacctctgac ttgagcgtcg 4740
atttttgtga tgctcgtcag gggggcggag cctatggaaa aacgccagca acgcggcctt 4800
tttacggttc ctggcctttt gctggccttt tgctcacatg ttctttcctg cgttatcccc 4860

tgattctgtg gataaccgta ttaccgccat gcat 4894

<210> 3
<211> 6525
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Vector

<400> 3
gcggccgcat aacttcgtat agcatacatt atacgaagtt atcagtcgac accatggaag 60
acgccaaaaa cataaagaaa ggccccggcgc cattctatcc tctagaggat ggaaccgctg 120
gagagcaact gcataaggct atgaagagat acgccctggt tcctggaaca attgctttta 180
cagatgcaca tatcgaggtg aacatcacgt acgcggaata cttcgaaatg tccgttcggt 240
tggcagaagc tatgaaacga tatgggctga atacaaatca cagaatcgtc gtatgcagtg 300
aaaactctct tcaattcttt atgccggtgt tgggcgcgtt atttatcgga gttgcagttg 360
cgcccgcgaa cgacatttat aatgaacgtg aattgctcaa cagtatgaac atttcgcagc 420
ctaccgtagt gtttgtttcc aaaaaggggt tgcaaaaaat tttgaacgtg caaaaaaaat 480
taccaataat tcagaaaatt attatcatgg attctaaaac ggattaccag ggatttcagt 540
cgatgtacac gttcgtcaca tctcatctac ctcccggttt taatgagtac gattttgtac 600
cagagtcctt tgatcgtgac aaaacaattg cactgataat gaattcctct ggatctactg 660
ggttacctaa gggtgtggcc cttccgcata gaactgcctg cgtcagattc tcgcatgcca 720
gagatcctat ttttggcaat caaatcattc cggatactgc gattttaagt gttgttccat 780
tccatcacgg ttttggaatg tttactacac tcggatattt gatatgtgga tttcgagtcg 840
tcttaatgta tagatttgaa gaagagctgt ttttacgatc ccttcaggat tacaaaattc 900
aaagtgcgtt gctagtacca accctatttt cattcttcgc caaaagcact ctgattgaca 960
aatacgattt atctaattta cacgaaattg cttctggggg cgcacctctt tcgaaagaag 1020
tcggggaagc ggttgcaaaa cgcttccatc ttccagggat acgacaagga tatgggctca 1080
ctgagactac atcagctatt ctgattacac ccgaggggga tgataaaccg ggcgcggtcg 1140
gtaaagttgt tccatttttt gaagcgaagg ttgtggatct ggataccggg aaaacgctgg 1200
gcgttaatca gagaggcgaa ttatgtgtca gaggacctat gattatgtcc ggttatgtaa 1260
acaatccgga agcgaccaac gccttgattg acaaggatgg atggctacat tctggagaca 1320
tagcttactg ggacgaagac gaacacttct tcatagttga ccgcttgaag tctttaatta 1380
aatacaaagg atatcaggtg gcccccgctg aattggaatc gatattgtta caacacccca 1440
acatcttcga cgcgggcgtg gcaggtcttc ccgacgatga cgccggtgaa cttcccgccg 1500
ccgttgttgt tttggagcac ggaaagacga tgacggaaaa agagatcgtg gattacgtcg 1560
ccagtcaagt aacaaccgcg aaaaagttgc gcggaggagt tgtgtttgtg gacgaagtac 1620
cgaaaggtct taccggaaaa ctcgacgcaa gaaaaatcag agagatcctc ataaaggcca 1680
agaagggcgg aaagtccaaa ttgaggatcc gggcccaggt gagtggtcat aatcataatc 1740
ataatcataa tcataatcac aactagccta ggagatcctg gtcatgacta gtgcttggat 1800
tctcaccaat aaaaaacgcc cggcggcaac cgagcgttct gaacaaatcc agatggagtt 1860
ctgaggtcat tactggatct atcaacagga gtccaagcga gctcgatatc aaattacgcc 1920
ccgccctgcc actcatcgca gtactgttgt aattcattaa gcattctgcc gacatggaag 1980
ccatcacaaa cggcatgatg aacctgaatc gccagcggca tcagcacctt gtcgccttgc 2040
gtataatatt tgcccatggt gaaaacgggg gcgaagaagt tgtccatatt ggccacgttt 2100
aaatcaaaac tggtgaaact cacccaggga ttggctgaga cgaaaaacat attctcaata 2160
aaccctttag ggaaataggc caggttttca ccgtaacacg ccacatcttg cgaatatatg 2220
tgtagaaact gccggaaatc gtcgtggtat tcactccaga gcgatgaaaa cgtttcagtt 2280
tgctcatgga aaacggtgta acaagggtga acactatccc atatcaccag ctcaccgtct 2340
ttcattgcca tacgaaattc cggatgagca ttcatcaggc gggcaagaat gtgaataaag 2400

gccggataaa acttgtgctt atttttcttt acggtcttta aaaaggccgt aatatccagc 2460
tgaacggtct ggttataggt acattgagca actgactgaa atgcctcaaa atgttcttta 2520
cgatgccatt gggatatatc aacggtggta tatccagtga ttttttttctc cattttagct 2580
tccttagctc ctgaaagatc cataacttcg tatagcatac attatacgaa gttatgcggc 2640
cgcgacgtcc acatatacct gccgttcact attatttagt gaaatgagat attatgatat 2700
tttctgaatt gtgattaaaa aggcaacttt atgcccatgc aacagaaact ataaaaaata 2760
cagagaatga aaagaaacag atagattttt tagttcttta ggcccgtagt ctgcaaatcc 2820
ttttatgatt ttctatcaaa caaaagagga aaatagacca gttgcaatcc aaacgagagt 2880
ctaatagaat gaggtcgaaa agtaaatcgc gcgggtttgt tactgataaa gcaggcaaga 2940
cctaaaatgt gtaaagggca aagtgtatac tttggcgtca ccccttacat attttaggtc 3000
ttttttttatt gtgcgtaact aacttgccat cttcaaacag gagggctgga agaagcagac 3060
cgctaacaca gtacataaaa aaggagacat gaacgatgaa catcaaaaag tttgcaaaac 3120
aagcaacagt attaaccttt actaccgcac tgctggcagg aggcgcaact caagcgtttg 3180
cgaaagaaac gaaccaaaag ccatataagg aaacatacgg catttcccat attacacgcc 3240
atgatatgct gcaaatccct gaacagcaaa aaaatgaaaa atatcaagtt cctgagttcg 3300
attcgtccac aattaaaaat atctcttctg caaaaggcct ggacgtttgg gacagctggc 3360
cattacaaaa cgctgacggc actgtcgcaa actatcacgg ctaccacatc gtctttgcat 3420
tagccggaga tcctaaaaat gcggatgaca catcgattta catgttctat caaaaagtcg 3480
gcgaaacttc tattgacagc tggaaaaacg ctggccgcgt ctttaaagac agcgacaaat 3540
tcgatgcaaa tgattctatc ctaaaagacc aaacacaaga atggtcaggt tcagccacat 3600
ttacatctga cggaaaaatc cgtttattct acactgattt ctccggtaaa cattacggca 3660
aacaaacact gacaactgca caagttaacg tatcagcatc agacagctct ttgaacatca 3720
acggtgtaga ggattataaa tcaatctttg acggtgacgg aaaaacgtat caaaatgtac 3780
agcagttcat cgatgaaggc aactacagct caggcgacaa ccatacgctg agagatcctc 3840
actacgtaga agataaaggc cacaaatact tagtatttga agcaaacact ggaactgaag 3900
atggctacca aggcgaagaa tctttattta acaaagcata ctatggcaaa agcacatcat 3960
tcttccgtca agaaagtcaa aaacttctgc aaagcgataa aaaacgcacg gctgagttag 4020
caaacggcgc tctcggtatg attgagctaa acgatgatta cacactgaaa aaagtgatga 4080
aaccgctgat tgcatctaac acagtaacag atgaaattga acgcgcgaac gtctttaaaa 4140
tgaacggcaa atggtacctg ttcactgact cccgcggatc aaaaatgacg attgacggca 4200
ttacgtctaa cgatatttac atgcttggtt atgtttctaa ttctttaact ggcccataca 4260
agccgctgaa caaaactggc cttgtgttaa aaatggatct tgatcctaac gatgtaacct 4320
ttacttactc acacttcgct gtacctcaag cgaaaggaaa caatgtcgtg attacaagct 4380
atatgacaaa cagaggattc tacgcagaca aacaatcaac gtttgcgcct agcttcctgc 4440
tgaacatcaa aggcaagaaa acatctgttg tcaaagacag catccttgaa caaggacaat 4500
taacagttaa caaataaaaa cgcaaaagaa aatgccgata tcctattggc attgacgtca 4560
ggtggcactt ttcggggaaa tgtgcgcgga acccctattt gtttatttttt ctaaatacat 4620
tcaaatatgt atccgctcat gagacaataa ccctgataaa tgcttcaata atattgaaaa 4680
aggaagagta tgagtattca acatttccgt gtcgccctta ttccctttttt tgcggcattt 4740
tgccttcctg tttttgctca cccagaaacg ctggtgaaag taaaagatgc tgaagatcag 4800
ttgggtgcac gagtgggtta catcgaactg gatctcaaca gcggtaagat ccttgagagt 4860
tttcgccccg aagaacgttt tccaatgatg agcacttttа aagttctgct atgtggcgcg 4920
gtattatccc gtattgacgc cgggcaagag caactcggtc gccgcataca ctattctcag 4980
aatgacttgg ttgagtactc accagtcaca gaaaagcatc ttacggatgg catgacagta 5040
agagaattat gcagtgctgc cataaccatg agtgataaca ctgcggccaa cttacttctg 5100
acaacgatcg gaggaccgaa ggagctaacc gcttttttgc acaacatggg ggatcatgta 5160
actcgccttg atcgttggga accggagctg aatgaagcca taccaaacga cgagcgtgac 5220
accacgatgc ctgtagcaat ggcaacaacg ttgcgcaaac tattaactgg cgaactactt 5280
actctagctt cccggcaaca attaatagac tggatggagg cggataaagt tgcaggacca 5340
cttctgcgct cggcccttcc ggctggctgg tttattgctg ataaatctgg agccggtgag 5400
cgtgggtctc gcggtatcat tgcagcactg gggccagatg gtaagccctc ccgtatcgta 5460

gttatctaca cgacggggag tcaggcaact atggatgaac gaaatagaca gatcgctgag 5520
ataggtgcct cactgattaa gcattggtaa ctgtcagacc aagtttactc atatatactt 5580
tagattgatt taaaacttca tttttaattt aaaaggatct aggtgaagat cctttttgat 5640
aatctcatga ccaaaatccc ttaacgtgag ttttcgttcc actgagcgtc agaccccgta 5700
gaaaagatca aaggatcttc ttgagatcct ttttttctgc gcgtaatctg ctgcttgcaa 5760
acaaaaaaac caccgctacc agcggtggtt tgtttgccgg atcaagagct accaactctt 5820
tttccgaagg taactggctt cagcagagcg cagataccaa atactgttct tctagtgtag 5880
ccgtagttag gccaccactt caagaactct gtagcaccgc ctacatacct cgctctgcta 5940
atcctgttac cagtggctgc tgccagtggc gataagtcgt gtcttaccgg gttggactca 6000
agacgatagt taccggataa ggcgcagcgg tcgggctgaa cgggggggttc gtgcacacag 6060
cccagcttgg agcgaacgac ctacaccgaa ctgagatacc tacagcgtga gctatgagaa 6120
agcgccacgc ttcccgaagg gagaaaggcg gacaggtatc cggtaagcgg cagggtcgga 6180
acaggagagc gcacgaggga gcttccaggg ggaaacgcct ggtatcttta tagtcctgtc 6240
gggtttcgcc acctctgact tgagcgtcga tttttgtgat gctcgtcagg ggggcggagc 6300
ctatggaaaa acgccagcaa cgcggccttt ttacggttcc tggccttttg ctggcctttt 6360
gctcacatgt tctttcctgc gttatcccct gattctgtgg ataaccgtat taccgcctta 6420
cgcgtgtaaa acgacggcca gtagatctgt aatacgactc actatagggc gctagctgct 6480
cgccgcagcc gaacgaccga gcgcagcgag tcagtgagcg aggaa 6525

<210> 4
<211> 7487
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Vector

<400> 4
tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata tggagttccg 60
cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc cccgcccatt 120
gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc attgacgtca 180
atgggtggag tatttacggt aaactgccca cttggcagta catcaagtgt atcatatgcc 240
aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt atgcccagta 300
catgacctta tgggactttc ctacttggca gtacatctac gtattagtca tcgctattac 360
catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg actcacgggg 420
atttccaagt ctccacccca ttgacgtcaa tgggagtttg ttttggcacc aaaatcaacg 480
ggactttcca aaatgtcgta acaactccgc cccattgacg caaatgggcg gtaggcgtgt 540
acggtgggag gtctatataa gcagagctgg tttagtgaac cgtcagatcc gctagcataa 600
cttcgtatag catacattat acgaagttat cagtcgacac catggaagac gccaaaaaca 660
taaagaaagg cccggcgcca ttctatcctc tagaggatgg aaccgctgga gagcaactgc 720
ataaggctat gaagagatac gccctggttc ctggaacaat tgcttttaca gatgcacata 780
tcgaggtgaa catcacgtac gcggaatact tcgaaatgtc cgttcggttg gcagaagcta 840
tgaaacgata tgggctgaat acaaatcaca gaatcgtcgt atgcagtgaa aactctcttc 900
aattctttat gccggtgttg ggcgcgttat ttatcggagt tgcagttgcg cccgcgaacg 960
acatttataa tgaacgtgaa ttgctcaaca gtatgaacat ttcgcagcct accgtagtgt 1020
ttgtttccaa aaaggggttg caaaaaattt tgaacgtgca aaaaaaatta ccaataattc 1080
agaaaattat tatcatggat tctaaaacgg attaccaggg atttcagtcg atgtacacgt 1140
tcgtcacatc tcatctacct cccggtttta atgagtacga ttttgtacca gagtcctttg 1200
atcgtgacaa aacaattgca ctgataatga attcctctgg atctactggg ttacctaagg 1260
gtgtggccct tccgcataga actgcctgcg tcagattctc gcatgccaga gatcctattt 1320
ttggcaatca aatcattccg gatactgcga ttttaagtgt tgttccattc catcacggtt 1380

ttggaatgtt tactacactc ggatatttga tatgtggatt tcgagtcgtc ttaatgtata 1440
gatttgaaga agagctgttt ttacgatccc ttcaggatta caaaattcaa agtgcgttgc 1500
tagtaccaac cctattttca ttcttcgcca aaagcactct gattgacaaa tacgatttat 1560
ctaatttaca cgaaattgct tctgggggcg cacctctttc gaaagaagtc ggggaagcgg 1620
ttgcaaaacg cttccatctt ccagggatac gacaaggata tgggctcact gagactacat 1680
cagctattct gattacaccc gaggggatg ataaaccggg cgcggtcggt aaagttgttc 1740
cattttttga agcgaaggtt gtggatctgg ataccgggaa aacgctgggc gttaatcaga 1800
gaggcgaatt atgtgtcaga ggacctatga ttatgtccgg ttatgtaaac aatccggaag 1860
cgaccaacgc cttgattgac aaggatggat ggctacattc tggagacata gcttactggg 1920
acgaagacga acacttcttc atagttgacc gcttgaagtc tttaattaaa tacaaaggat 1980
atcaggtggc ccccgctgaa ttggaatcga tattgttaca acaccccaac atcttcgacg 2040
cgggcgtggc aggtcttccc gacgatgacg ccggtgaact tcccgccgcc gttgttgttt 2100
tggagcacgg aaagacgatg acggaaaaag agatcgtgga ttacgtcgcc agtcaagtaa 2160
caaccgcgaa aaagttgcgc ggaggagttg tgtttgtgga cgaagtaccg aaaggtctta 2220
ccggaaaact cgacgcaaga aaaatcagag agatcctcat aaaggccaag aagggcggaa 2280
agtccaaatt gaggatccgg gcccaggtga gtggtcataa tcataatcat aatcataatc 2340
ataatcacaa ctagcctagg agatcctggt catgactagt gcttggattc tcaccaataa 2400
aaaacgcccg gcggcaaccg agcgttctga acaaatccag atggagttct gaggtcatta 2460
ctggatctat caacaggagt ccaagcgagc tcgatatcaa attacgcccc gccctgccac 2520
tcatcgcagt actgttgtaa ttcattaagc attctgccga catggaagcc atcacaaacg 2580
gcatgatgaa cctgaatcgc cagcggcatc agcaccttgt cgccttgcgt ataatatttg 2640
cccatggtga aaacgggggc gaagaagttg tccatattgg ccacgtttaa atcaaaactg 2700
gtgaaactca cccagggatt ggctgagacg aaaaacatat tctcaataaa ccctttaggg 2760
aaataggcca ggttttcacc gtaacacgcc acatcttgcg aatatatgtg tagaaactgc 2820
cggaaatcgt cgtggtattc actccagagc gatgaaaacg tttcagtttg ctcatggaaa 2880
acggtgtaac aagggtgaac actatcccat atcaccagct caccgtcttt cattgccata 2940
cgaaattccg gatgagcatt catcaggcgg gcaagaatgt gaataaaggc cggataaaac 3000
ttgtgcttat ttttctttac ggtctttaaa aaggccgtaa tatccagctg aacggtctgg 3060
ttataggtac attgagcaac tgactgaaat gcctcaaaat gttctttacg atgccattgg 3120
gatatatcaa cggtggtata tccagtgatt tttttctcca ttttagcttc cttagctcct 3180
gaaagatcca taacttcgta tagcatacat tatacgaagt tatagatcca atattattga 3240
agcatttatc agggttattg tctcatgagc ggatacatat ttgaatgtat ttagaaaaat 3300
aaacaaatag gggttccgcg cacatttccc cgaaaagtgc cacctgacgt ggatctcgag 3360
ctcaagcttc gaattcaggg tttccttgac aatatcatac ttatcctgtc ccttttttt 3420
ccacagctac cggtcgcgag caagggcgag gagctgttca ccggggtggt gcccatcctg 3480
gtcgagctgg acggcgacgt aaacggccac aagttcagcg tgtccggcga gggcgagggc 3540
gatgccacct acggcaagct gaccctgaag ttcatctgca ccaccggcaa gctgcccgtg 3600
ccctggccca ccctcgtgac caccctgacc tacggcgtgc agtgcttcag ccgctacccc 3660
gaccacatga agcagcacga cttcttcaag tccgccatgc ccgaaggcta cgtccaggag 3720
cgcaccatct tcttcaagga cgacggcaac tacaagaccc gcgccgaggt gaagttcgag 3780
ggcgacaccc tggtgaaccg catcgagctg aagggcatcg acttcaagga ggacggcaac 3840
atcctggggc acaagctgga gtacaactac aacagccaca acgtctatat catggccgac 3900
aagcagaaga acggcatcaa ggtgaacttc aagatccgcc acaacatcga ggacggcagc 3960
gtgcagctcg ccgaccacta ccagcagaac acccccatcg gcgacggccc cgtgctgctg 4020
cccgacaacc actacctgag cacccagtcc gccctgagca aagaccccaa cgagaagcgc 4080
gatcacatgg tcctgctgga gttcgtgacc gccgccggga tcactctcgg catggacgag 4140
ctgtacaagt aaagcggccg cgactctaga tcataatcag ccataccaca tttgtagagg 4200
ttttacttgc tttaaaaaac ctcccacacc tccccctgaa cctgaaacat aaaatgaatg 4260
caattgttgt tgttaacttg tttattgcag cttataatgg ttacaaataa agcaatagca 4320
tcacaaattt cacaaataaa gcatttttt cactgcattc tagttgtggt ttgtccaaac 4380
tcatcaatgt atcttaaggc gtaaattgta agcgttaata ttttgttaaa attcgcgtta 4440

aatttttgtt aaatcagctc atttttttaac caataggccg aaatcggcaa aatcccttat 4500
aaatcaaaag aatagaccga gatagggttg agtgttgttc cagtttggaa caagagtcca 4560
ctattaaaga acgtggactc caacgtcaaa gggcgaaaaa ccgtctatca gggcgatggc 4620
ccactacgtg aaccatcacc ctaatcaagt tttttggggt cgaggtgccg taaagcacta 4680
aatcggaacc ctaaagggag cccccgattt agagcttgac ggggaaagcc ggcgaacgtg 4740
gcgagaaagg aagggaagaa agcgaaagga gcgggcgcta gggcgctggc aagtgtagcg 4800
gtcacgctgc gcgtaaccac cacacccgcc gcgcttaatg cgccgctaca gggcgcgtca 4860
ggtggcactt ttcggggaaa tgtgcgcgga acccctattt gtttattttt ctaaatacat 4920
tcaaatatgt atccgctcat gagacaataa ccctgataaa tgcttcaata atattgaaaa 4980
aggaagagtc ctgaggcgga aagaaccagc tgtggaatgt gtgtcagtta gggtgtggaa 5040
agtccccagg ctccccagca ggcagaagta tgcaaagcat gcatctcaat tagtcagcaa 5100
ccaggtgtgg aaagtcccca ggctccccag caggcagaag tatgcaaagc atgcatctca 5160
attagtcagc aaccatagtc ccgcccctaa ctccgcccat cccgcccccta actccgccca 5220
gttccgccca ttctccgccc catggctgac taatttttttt tatttatgca gaggccgagg 5280
ccgcctcggc ctctgagcta ttccagaagt agtgaggagg ctttttttgga ggcctaggct 5340
tttgcaaaga tcgatcaaga gacaggatga ggatcgtttc gcatgattga acaagatgga 5400
ttgcacgcag gttctccggc cgcttgggtg gagaggctat tcggctatga ctgggcacaa 5460
cagacaatcg gctgctctga tgccgccgtg ttccggctgt cagcgcaggg gcgcccggtt 5520
ctttttgtca agaccgacct gtccggtgcc ctgaatgaac tgcaagacga ggcagcgcgg 5580
ctatcgtggc tggccacgac gggcgttcct tgcgcagctg tgctcgacgt tgtcactgaa 5640
gcgggaaggg actggctgct attgggcgaa gtgccggggc aggatctcct gtcatctcac 5700
cttgctcctg ccgagaaagt atccatcatg gctgatgcaa tgcggcggct gcatacgctt 5760
gatccggcta cctgcccatt cgaccaccaa gcgaaacatc gcatcgagcg agcacgtact 5820
cggatggaag ccggtcttgt cgatcaggat gatctggacg aagagcatca ggggctcgcg 5880
ccagccgaac tgttcgccag gctcaaggcg agcatgcccg acggcgagga tctcgtcgtg 5940
acccatggcg atgcctgctt gccgaatatc atggtggaaa atggccgctt ttctggattc 6000
atcgactgtg gccggctggg tgtggcggac cgctatcagg acatagcgtt ggctacccgt 6060
gatattgctg aagagcttgg cggcgaatgg gctgaccgct tcctcgtgct ttacggtatc 6120
gccgctcccg attcgcagcg catcgccttc tatcgccttc ttgacgagtt cttctgagcg 6180
ggactctggg gttcgaaatg accgaccaag cgacgcccaa cctgccatca cgagatttcg 6240
attccaccgc cgccttctat gaaaggttgg gcttcggaat cgttttccgg gacgccggct 6300
ggatgatcct ccagcgcggg gatctcatgc tggagttctt cgcccaccct agggggaggc 6360
taactgaaac acggaaggag acaataccgg aaggaacccg cgctatgacg gcaataaaaa 6420
gacagaataa aacgcacggt gttgggtcgt ttgttcataa acgcggggtt cggtcccagg 6480
gctggcactc tgtcgatacc ccaccgagac cccattgggg ccaatacgcc cgcgtttctt 6540
ccttttcccc accccacccc ccaagttcgg gtgaaggccc agggctcgca gccaacgtcg 6600
gggcggcagg ccctgccata gcctcaggtt actcatatat actttagatt gatttaaaac 6660
ttcattttta atttaaaagg atctaggtga agatcctttt tgataatctc atgaccaaaa 6720
tcccttaacg tgagttttcg ttccactgag cgtcagaccc cgtagaaaag atcaaaggat 6780
cttcttgaga tcctttttttt ctgcgcgtaa tctgctgctt gcaaacaaaa aaaccaccgc 6840
taccagcggt ggtttgtttg ccggatcaag agctaccaac tctttttccg aaggtaactg 6900
gcttcagcag agcgcagata ccaaatactg tccttctagt gtagccgtag ttaggccacc 6960
acttcaagaa ctctgtagca ccgcctacat acctcgctct gctaatcctg ttaccagtgg 7020
ctgctgccag tggcgataag tcgtgtctta ccgggttgga ctcaagacga tagttaccgg 7080
ataaggcgca gcggtcgggc tgaacggggg gttcgtgcac acagcccagc ttggagcgaa 7140
cgacctacac cgaactgaga tacctacagc gtgagctatg agaaagcgcc acgcttcccg 7200
aagggagaaa ggcggacagg tatccggtaa gcggcagggt cggaacagga gagcgcacga 7260
gggagcttcc agggggaaac gcctggtatc tttatagtcc tgtcgggttt cgccacctct 7320
gacttgagcg tcgatttttg tgatgctcgt caggggggcg gagcctatgg aaaaacgcca 7380
gcaacgcggc ctttttacgg ttcctggcct tttgctggcc ttttgctcac atgttctttc 7440
ctgcgttatc ccctgattct gtggataacc gtattaccgc catgcat 7487

<210> 5
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 5
caggtgagtt aggtaagtga acatggtcat agctgtttc 39

<210> 6
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 6
ccgggtccac tcaatccatt cacttgtacc agtatcgaca aaggatc 47

<210> 7
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 7
aattcagggt ttccttgaca atatcatact tatcctgtcc ctttttttc cacagcta 58

<210> 8
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 8
gtcccaaagg aactgttata gtatgaatag gacagggaaa aaaaaggtgt cgatggcc 58

<210> 9
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 9
agttggtggt gaggccctgg gcaggttggt atcaaggtta caagacaggt 50

<210> 10
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 10
tcaaccacca ctccgggacc cgtccaacca tagttccaat gttctgtcca 50

<210> 11
<211> 100
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 11
cgtagtgtaa agttggtggt gaggccctgg gcaggttggt atcaaggtta caagacaggt 60
cataatcata atcataatca taatcataat cacaactagc 100

<210> 12
<211> 108
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 12
ccgggcatca catttcaacc accactccgg gacccgtcca accatagttc caatgttctg 60
tccagtatta gtattagtat tagtattagt attagtgttg atcggatc 108

<210> 13
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 13
ggtcataatc ataatcataa tcataatcat aatcacaact ag 42

<210> 14
<211> 42

<212> DNA
<213> Artificial Sequence

<220>
<223> tag sequence

<400> 14
ccagtattag tattagtatt agtattagta ttagtgttga tc 42

<210> 15
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> tag sequence

<400> 15
Gly His Asn His Asn His Asn His Asn His Asn His Asn
1 5 10

<210> 16
<211> 91
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 16
aattcttggg tttctgatag gcactgactc tctctgccga ttggtctatt ttcccaccct 60
taggctgctg gtggtctacc cttggaccct a 91

<210> 17
<211> 91
<212> DNA
<213> Artificial Sequence

<220>
<223> splice sequence

<400> 17
gaacccaaag actatccgtg actgagagag acggctaacc agataaaagg gtgggaatcc 60
gacgaccacc agatgggaac ctgggatggc c 91